

CHAPTER V

CONCLUSION AND FUTURE WORK

5.1 Conclusion

Mechanical and physical properties of PP/PLA blends at ratios of 90/10, 80/20, and 70/30 with quinacridone 122, phthalocyanine 15:3, and nucleating agent (DMDBS) were studied. The compatibilizer was kept constant at 5% of PP-g-MA content and both pigments were varied from 0.2% to 1.0%wt. PP and PLA are basically the incompatible blend. The PP-g-MA was necessary to be used as compatibilizer for interfacial adhesion improvement of the blends. The efficiency of quinacridone 122 and phthalocyanine 15:3 in PP/PLA blends process was studied in terms of the crystallization temperature of the pigmented and unpigmented blends. It was found that the crystallization of the blended films was increased by pigment addition. Both pigments performed well as a nucleating activity. In the presence of pigments, the increment of the crystallization temperature, and nucleation efficiency were obtained.

SEM micrographs exhibited smoother interfacial boundary between PP/PLA blends when the compatibilizer (PP-g-MA) was added. The effect of adding nucleating agents in PP resulted in decreasing haze value because the spherulite size was reduced. On the contrary, haze value of the blends increased regarding the incompatibility of PP/PLA blends since the nucleating agents were more effective particularly in PP phase in the blends. XRD diffractograms suggested that α -form was generated in the blends, corresponding to the form typically found in the isotactic PP, while phthalocyanine 15:3 blends showed a higher value of tensile strength than the quinacridone 122 blends. The thermal stability of quinacridone 122 blends exhibited a slightly better than phthalocyanine 15:3 blends.

5.2 Suggestion for further study

5.2.1 Increase a higher content of maleic anhydride in PP-g-MA through reactive blending to increase the extent of PP and PLA blend compatibility.

5.2.2 Investigation of the extent of degradation of the PP/PLA blends either by biotechnological techniques or photoinduced degradation.